

zinc concentrate, assaying approximately 15 oz. silver a ton and 32 per cent. zinc. Milling costs averaged 87½ cents a ton of ore milled, and mining and tramming \$1.53 a ton, making a total of \$1.92½ a ton for mining and milling."

The management of the *Surprise* mine shipped its lead as well as its zinc product to the United States in 1915. Shipments of lead ore from this mine to Trail in 1914 totalled 516 tons, but not any was sent there in 1915. Returns of shipments made since the end of October have not yet been received, but the output of the mine for ten months was approximately 9,300 tons, of which about 9,000 tons was milled, the remainder having been sorted lead ore, shipped crude. The total quantity shipped to October 28th was 1,415 tons of lead product (30 cars of concentrate and 7 cars of crude ore), and 64 cars containing 2,000 tons of zinc concentrate. Zinc concentrate was shipped to the Empire Zinc Company, Collinsville, Oklahoma, and the lead product to the American Metal Company, Newark, New Jersey. It may be of interest to note that the average metal contents of the ore milled were: Silver, 27.8 oz. to the ton; zinc, 10.7 per cent.; and lead, 8.7 per cent.; the average recovery was: Silver, 75 per cent.; zinc, 57 per cent.; and lead, 92.5 per cent. The ore was concentrated at the *Ivanhoe* mill, Sandon, until fire destroyed that concentrator; afterward the *Rambler-Cariboo* mill was used for an agreed part of each month. The owners of the *Surprise* mine are Congressman Wm. Kent, of Kentfield, Marin County, California, and Alex. Smith, of Toronto, Ontario.

The *Noble Five* group was not among the ore-shippers in 1915, but deep-level development-work was continued under the direction of Paul Lincoln, manager. The crosscut adit, which was in about 900 feet at the close of 1914, was extended to 2,300 feet from the portal. At 1,800 feet in, the *Noble Five* vein was reached; a strong vein, 16 feet wide, heavily mineralized, chiefly with iron. It was drifted on 150 feet and it still retained its size and character, but was explored too far west to enter the ore-shoot opened in the old *Noble Five* workings, 1,200 feet above. Late in the year the adit was being further extended to cut the *Last Chance* vein at about 2,000 feet below where it was worked by the *Last Chance* company. The adit is 2,500 feet lower than the apex of the ridge above and east of Cody gulch. It is planned to raise from the adit to workings in which milling-ore is known to occur. Among the objects in view in driving this low-level crosscut is to avoid the danger to which employees are every winter exposed in the snowslide season, a number of men having lost their lives when going to or from the upper camp during the long period since the *Noble Five* was opened; further, when the raise shall be through to the upper workings, it will be practicable to work the mine throughout the year, and, as well, to handle the ore at lower cost. It is of interest to know that the machine-drills used in the crosscut adit mentioned are operated by air compressed at the mill in Cody and delivered through 3,000 feet of pipe to the portal of the adit, and thence more than 2,000 feet to the working-face.

The *Noonday*, situated a mile or so west of Cody, is opened by three adits. No. 1 reached the vein at 75 feet in, No. 2 at 165 feet, and No. 3 at 290 feet. The vein has been drifted on 350 feet north-east and 800 feet south-west on No. 2 level, above which there is about 100 feet of stoping-ground. No. 3 is 140 vertically or 100 feet on dip of vein below No. 2; when visited in October the drift south-west on No. 3 was in 120 feet, with about 100 feet more to be driven to get under the ore-shoot opened in No. 2. A wagon-road was constructed last year up to the mine, and buildings have been erected for the accommodation of the men employed.

A vein on the *Aldree Fraction*, next to the *Freddie Lee*, situated above the *Colonial*, at a high elevation on the mountain across the creek from the *Noonday*, was followed for 200 or 300 feet and some high-grade silver-lead ore taken out, but the ore-shoot had been small along the drift run up to the end of October. From the *Mountain Con*, in the mountains to the southward, there was shipped one car of high-grade ore in May and two cars in October. Of the latter, one car of 40 tons averaged 1,059 oz. silver to the ton and 41 per cent. lead, and the other car, of 39 tons, 685 oz. silver to the ton and 19.1 per cent. lead. Six men were working leases on the *Reco*—